BRIEF DESCRIPTION OF THE INVENTION

The present invention in its broadest aspect, comprises a method to remove sugars from a hydrolysate, containing sugars, transferred from a hydrolysis vessel. Biomass and concentrated acid supplied to the hydrolysis vessel, will, by subjecting biomass to hydrolysis, form a hydrolysate containing sugars. Upon transferring the hydrolysate from the vessel, the hydrolysate is subjected to a phase forming vessel to form two phases; one phase of sugars and one phase of concentrated acid. In the preferred method, the transferred hydrolysate is cooled to form two phases, as earlier defined. The phase containing sugars is separated from the hydrolysate of concentrated acid and dissolved sugars, not separated. The separated sugar phase is subjected to additional processing and the phase of concentrated acid is recycled to the hydrolysis vessel. Residue containing lignins from hydrolysis of a biomass is subjected to filtration to produce a filtrate. The filtrate is recycled to the hydrolysis vessel. The filtered residue is extracted by water to produce extracted residue as a fuel and an extractate subject to additional treatment.

Characteristics of the invention include;

By providing the hydrolysis vessel with a biomass and concentrated acid, a hydrolysate of concentrated acid and sugars is formed.

Removing sugars from the hydrolysate is accomplished by forming two <u>mutually insoluble</u> phases within a phase forming vessel, <u>a solid sugar phase and an aqueous acidic solution phase.</u>

The phase of concentrated acid is recycled to the hydrolysis vessel for additional hydrolysis of a biomass.

The hydrolysis vessel is established at a predetermined temperature of about 30^0C. to about 45 ^{0}C. and maintained at substantially isothermal conditions

Sugars of glucose and pentose sugars are customarily subjected to fermentation for production of ethanol.

Residue from hydrolysis of a biomass is filtered for producing filtered residue and a filtrate for recycle to the hydrolysis vessel.